

# **Visual Notification Appliances Requirements**

Edwards Systems Technology,





# **Why are Visual Notification Appliances needed ?**

- **Estimated one in 125 American suffer profound hearing loss (little or no sound).**
- **One in 11 Americans suffers some form of hearing impairment.**
- **We all lose a decibel of hearing each year past the age of 35.**
- **Occupancy types.**



# **What standards specifically govern the use of Visual appliances ?**

- **Americans with Disabilities Act (ADA).**
- **National Fire Alarm Code (NFPA72).**
- **Accessible and Usable Buildings and Facilities (ANSI 117.1).**
- **Standards for Safety Signaling Devices for the Hearing Impaired (UL1971).**
- **Standards for Safety for Visible Signaling Appliances - Private Mode Emergency and General Utility Signaling (UL1638).**
- **Illinois Accessibility Code - 1997.**
- **Building Codes and Amendments.**



# **How do I know whether a fire alarm system requires visual signals ?**

- **Does the Building Code require fire alarm system?**
  - **If you have fire alarm system, it must meet NFPA 72 requirements.**
  - **If it meets NFPA requirements, it must have an emergency notification component.**
    - **It it has emergency notification component, it must meet ADA requirements.**
    - **If it meets ADA requirements it must have visual signals.**
- **Therefore, if you have fire alarm system it must have visual signals.**



# What are the requirements for visual signals ?

- *Signal characteristics.* **Color of the light, how bright, how long is each flash lasts, and period of time between flashes.**
- *Signal placement.* **Placement of visual signals is key to effective signaling.**
- *Signal coverage.* **Flash intensity and the spacing of strobes need to be finely balanced to provide adequate signaling throughout the coverage area.**
- *Room use.* **Sleeping rooms have special requirements for intensity and placement.**



# ADA Guidelines

## ADAAG - ALARMS 4.28

- **75 CD at 50 feet maximum.**
- **80 inches above floor / 6 inches below ceiling.**
- **3 flashes per second (max).**
- **Xenon strobe and clear white lens.**
- **0.2 seconds maximum flash pulse.**



# ADA Guidelines

New Construction - 4.1.1(14)

- **If emergency warning systems are provided, then they shall include both audible and visual alarms.**

Existing Facilities - 4.1.6 (b)

- **Upgrades or replacement of fire alarm system requires compliance with ADAAG.**



# Location of Visuals

- **Restrooms**
- **Corridors**
- **Hallways**
- **Lobbies**
- **Common Use Areas;**
  - **Conference rooms, classrooms, cafeterias, examination/treatment rooms, filing/photocopy rooms, break rooms, dressing/fitting rooms, and similar spaces that are not used as employee work areas.**



# **U.S. Architectural and Transportation Barriers Compliance Board Bulletin #2: VISUAL ALARMS**

## **Detail explanation of ADAAG regarding Visual Alarms.**

- **Equivalent Facilitation ADAAG 2.2.**
  - **Permits alternative designs that achieve substantially equivalent or greater accessibility. (0.0300 lumens/ft<sup>2</sup>)**
  - **UL1971 and NFPA 72**
    - **Mount of visuals 80 to 96 Inches AFF is acceptable.**
    - **0.0375 exceeds ADAAG.**
- **Illinois Accessibility Code - Appendix D**



# **UL1971 & NFPA 72**

- **0.0375 lumens/ft<sup>2</sup>**
- **Entire lens not less than 80 inches and not greater than 96 inches AFF.**
- **Ceiling Mount (10ft - 20ft - 30ft)**
- **Corridor Spacing Requirements**
- **2 flashes per second (max).**
- **Xenon strobe.**
- **0.2 seconds maximum flash pulse**
- **Synchronized of strobes is required wherever two or more strobes share the same field of view.**



# UL1971 & NFPA 72

- **Room Spacing - Wall Mounted**

<b><u>Maximum Area</u></b>	<b><u>Strobe Rating</u></b>
20' x 20'	15 Candela
30' x 30'	30 Candela
40' x 40'	60 Candela
50' x 50'	95 Candela



# UL1971 & NFPA 72

- **Room Spacing - Ceiling Mounted**

<b><u>Maximum Area</u></b>	<b><u>10ft Ceiling</u></b>	<b><u>20ft Ceiling</u></b>	<b><u>30ft Ceiling</u></b>
20' x 20'	15 Candela	30 Candela	55 Candela
30' x 30'	30 Candela	45 Candela	75 Candela
40' x 40'	60 Candela	80 Candela	115 Candela
50' x 50'	95 Candela	115 Candela	150 Candela



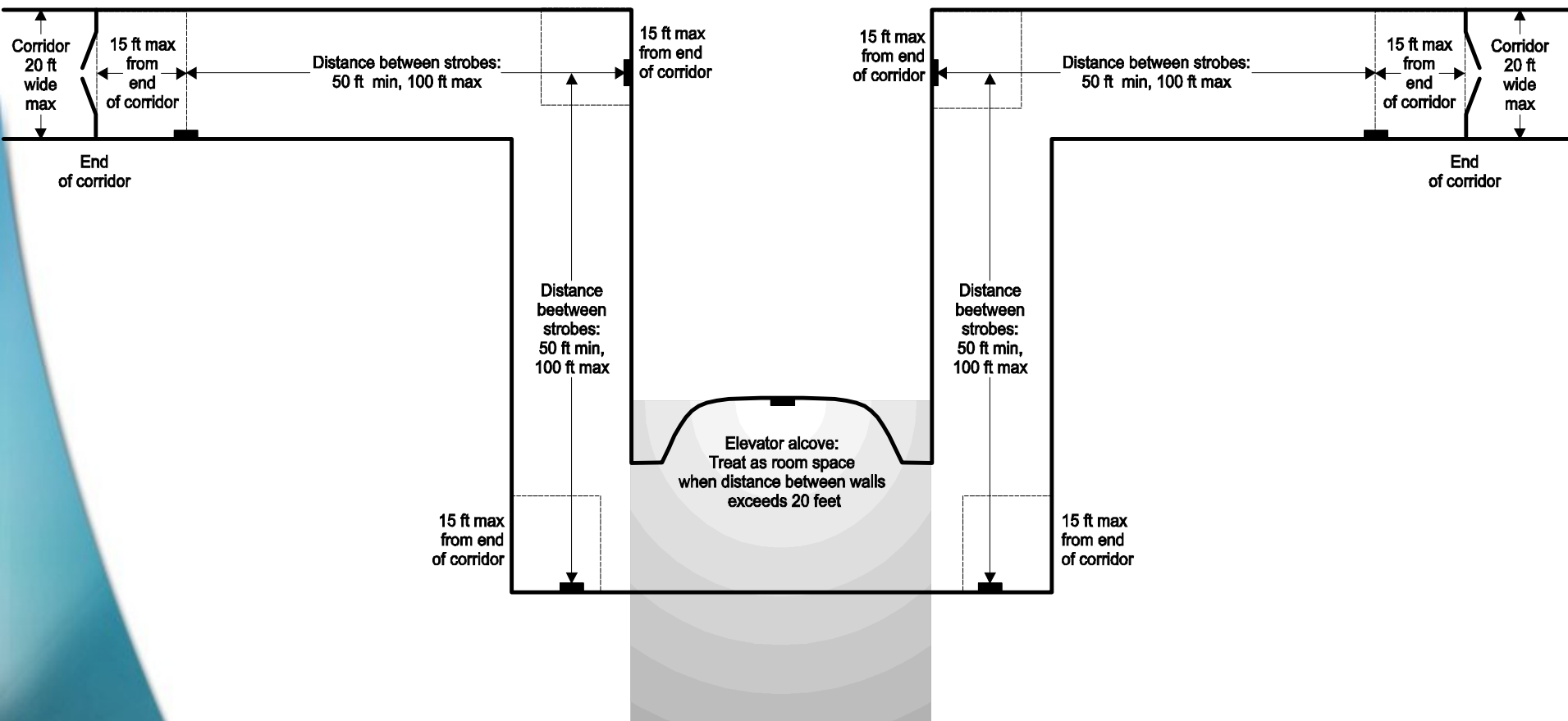
# **UL1971 & NFPA 72**

## **Corridor Spacing**

- **Corridor not exceeding 20 feet in width.**
- **Visual located no more than 15 feet from ends.**
- **100 feet between visuals.**
- **Ceiling or wall mounted visuals.**
- **Any interruption of viewing path, such as fire door, elevation change or other obstructions; the area shall be treated as a separate corridor.**

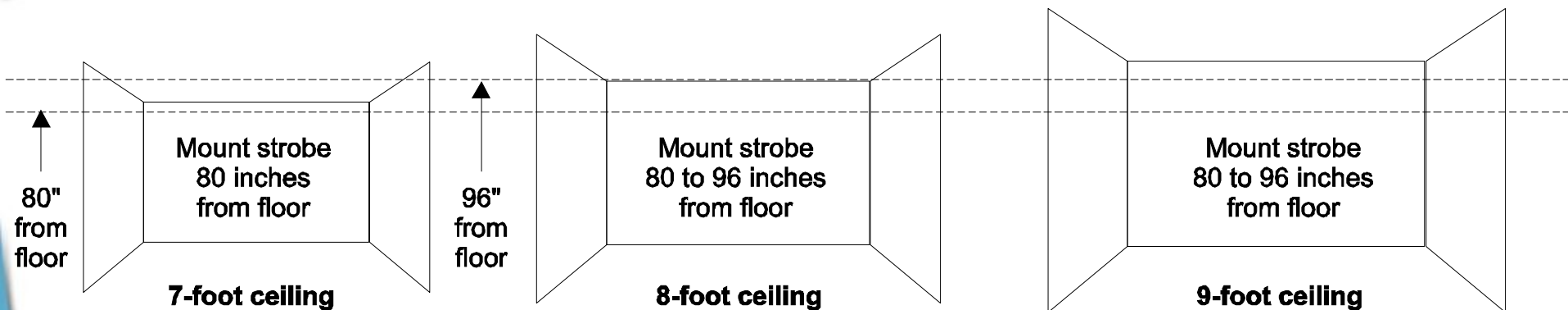


# Corridor Layout

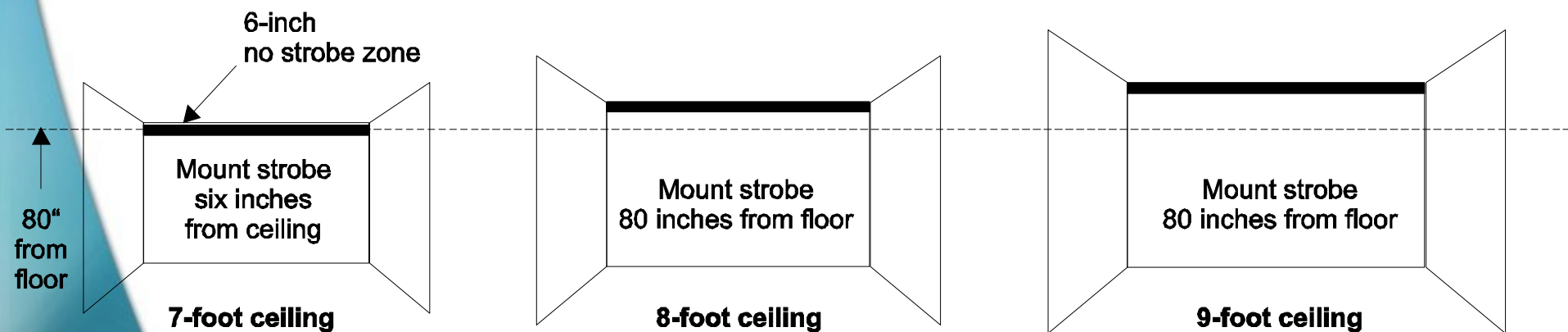




# Mounting Heights



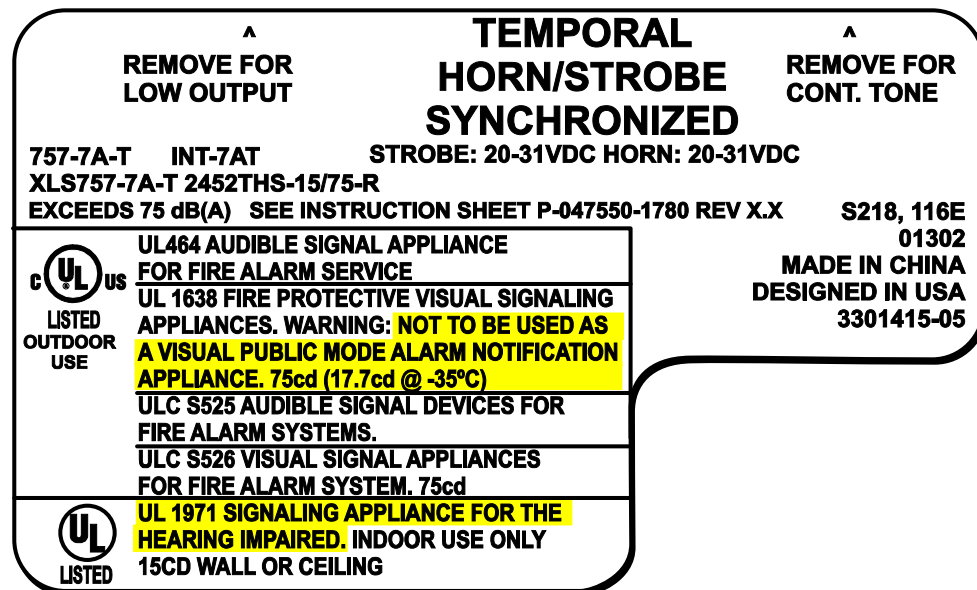
NFPA72 / UL1971



ADAAG



# What is 15/75 Candela ?



## UL1638

- **UL Standard for Fire Protective Visual Signaling Appliances. Not to be used as a Visual Public Mode Alarm Notification.**
- **The 75 candela is listed to the old UL standard.**

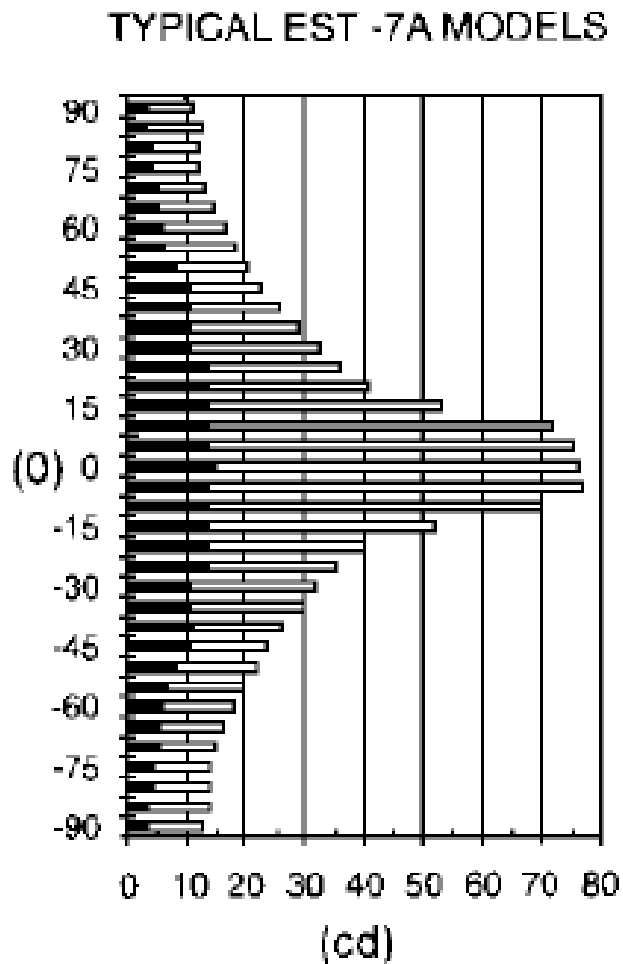
## UL1971

- **The 15 candela is listed to the current UL Standard for Hearing Impaired.**



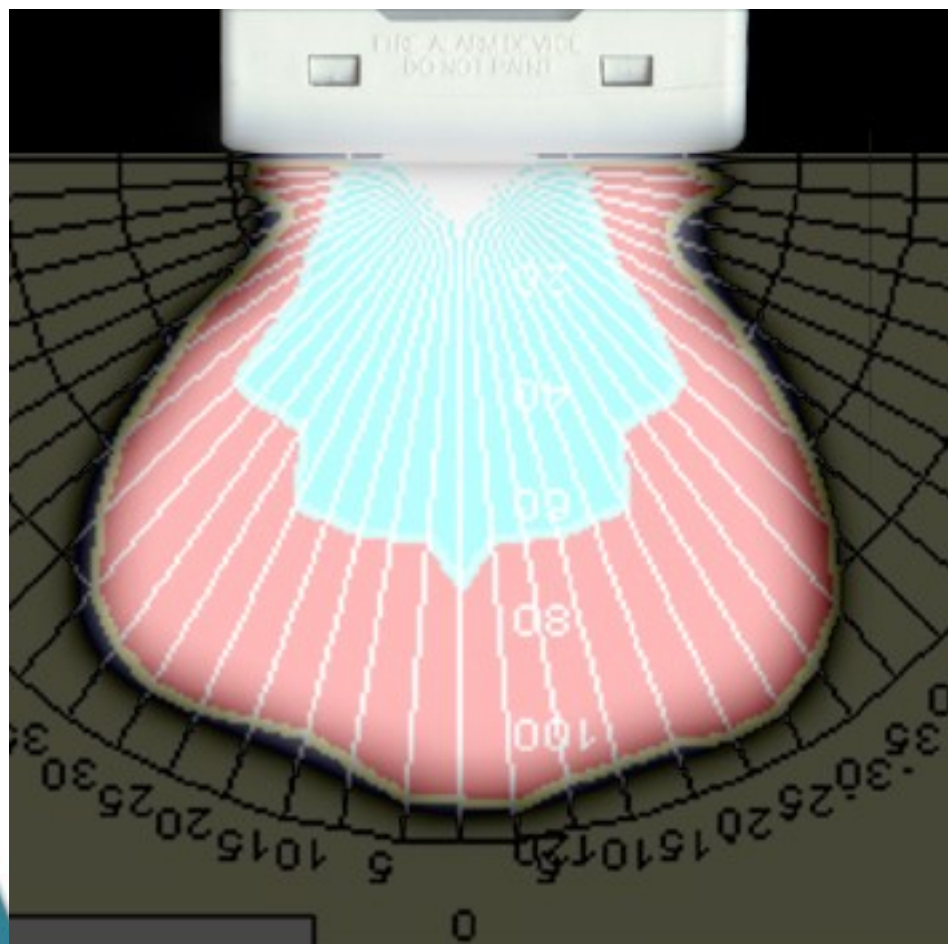
# What is 15/75 Candela ?

**15 Candela**  
Area Coverage  
UL 1971



**75 Candela**  
Viewed Straight On  
UL 1638

# UL1971 standard

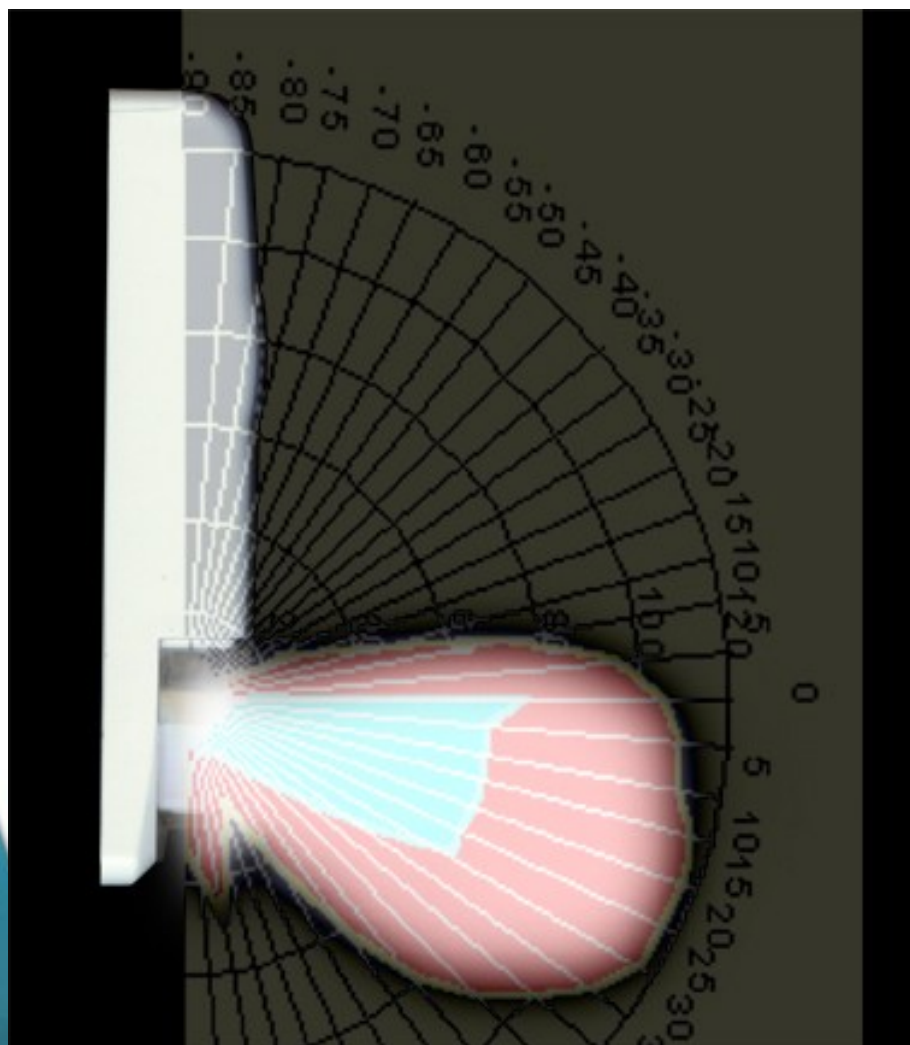


**Controlled  
Light  
Distribution**

***Horizontal  
Light Output***

- Intensity (CD)
- UL Limit (Cd)

# UL1971 standard



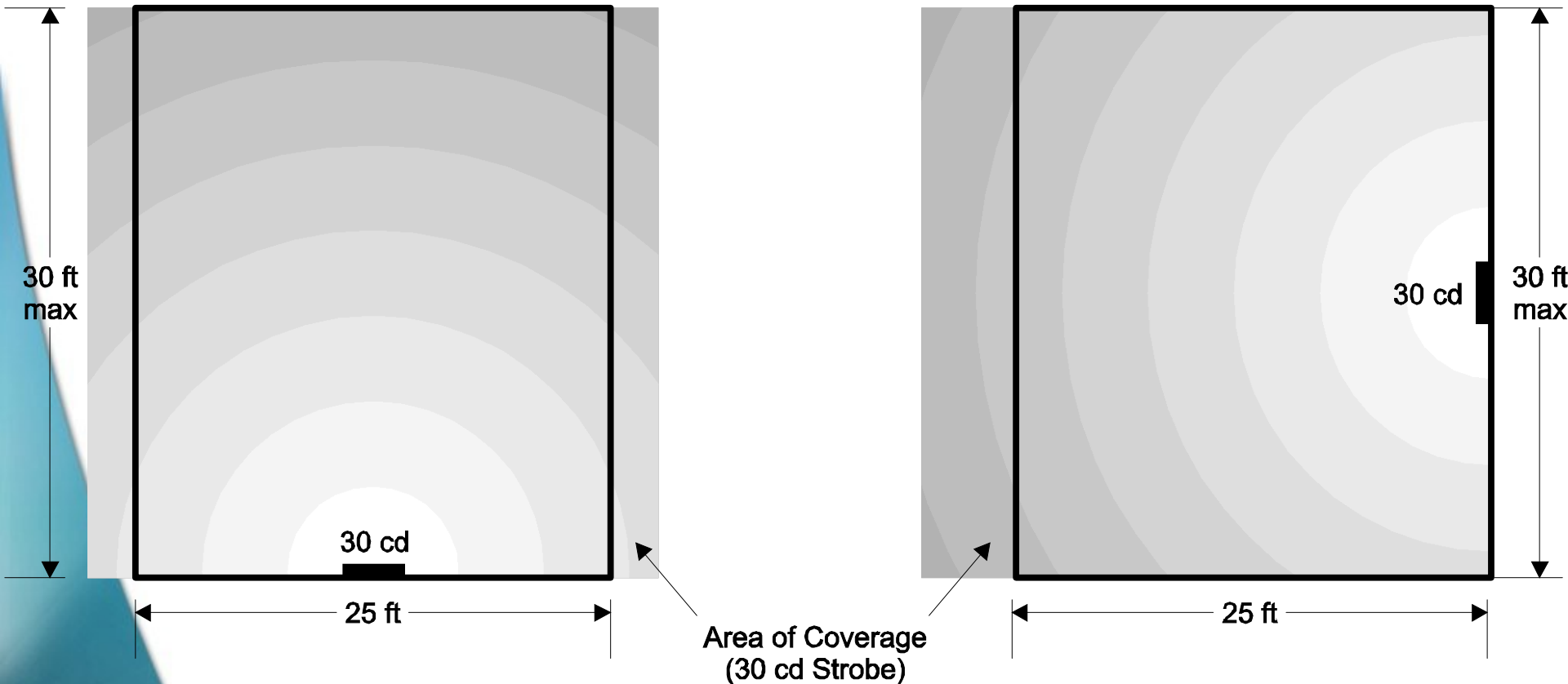
**Controlled  
Light  
Distributio  
n**

***Vertical Light  
Output Profile***

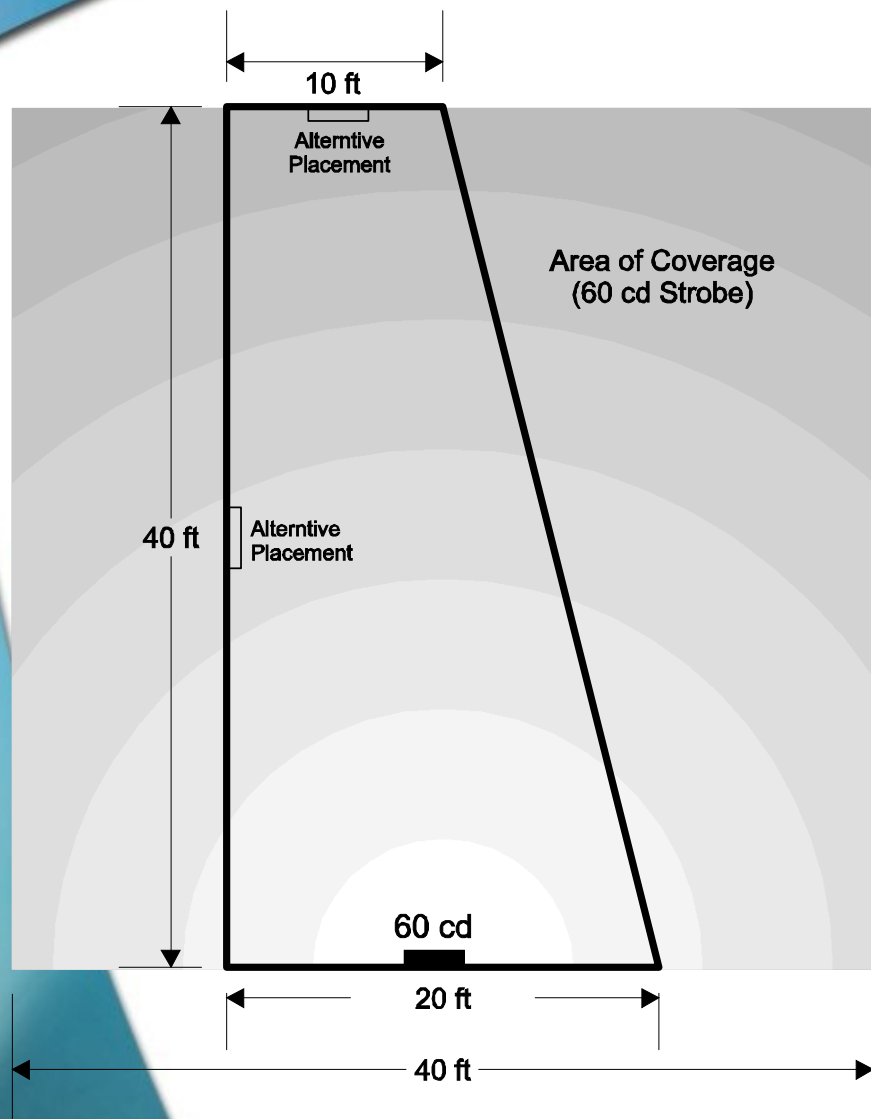
■ Intensity (CD)  
■ UL Limit (Cd)



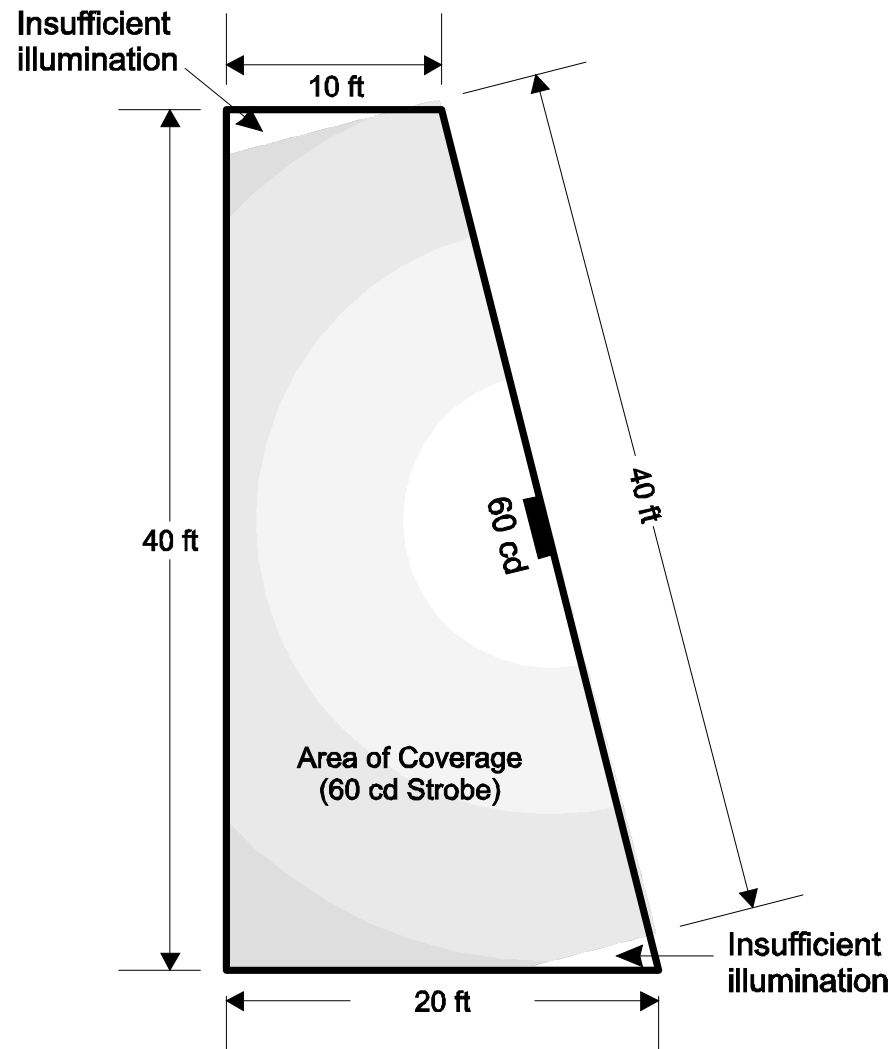
# Strobe Coverage Area



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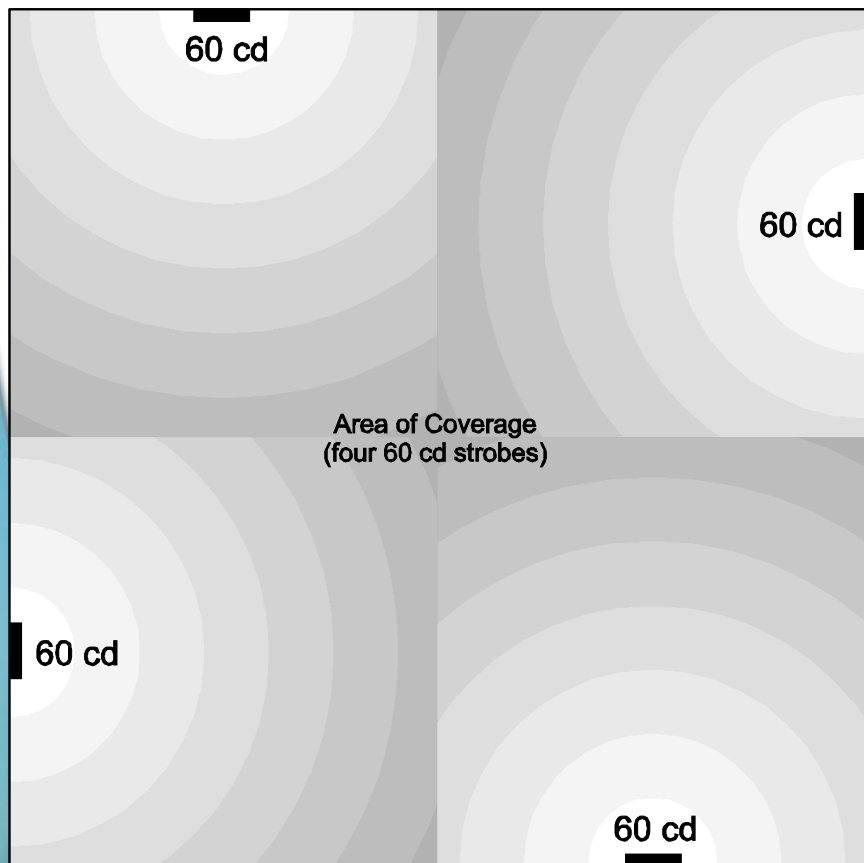


**Correct strobe coverage**

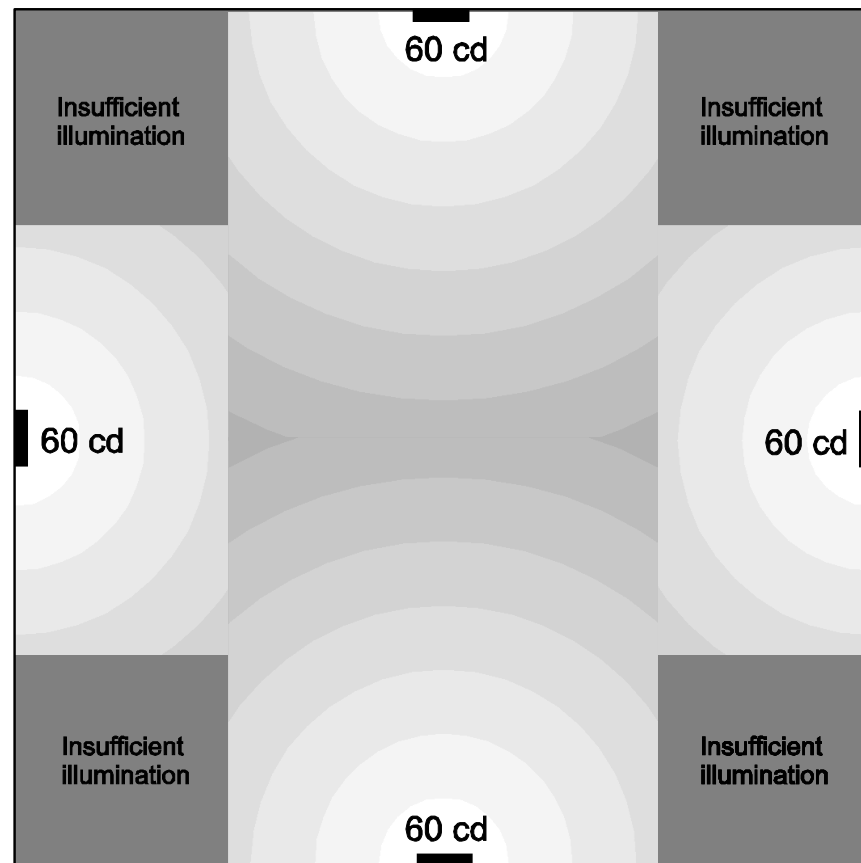


**Incorrect strobe coverage**

# Strobe Coverage Area



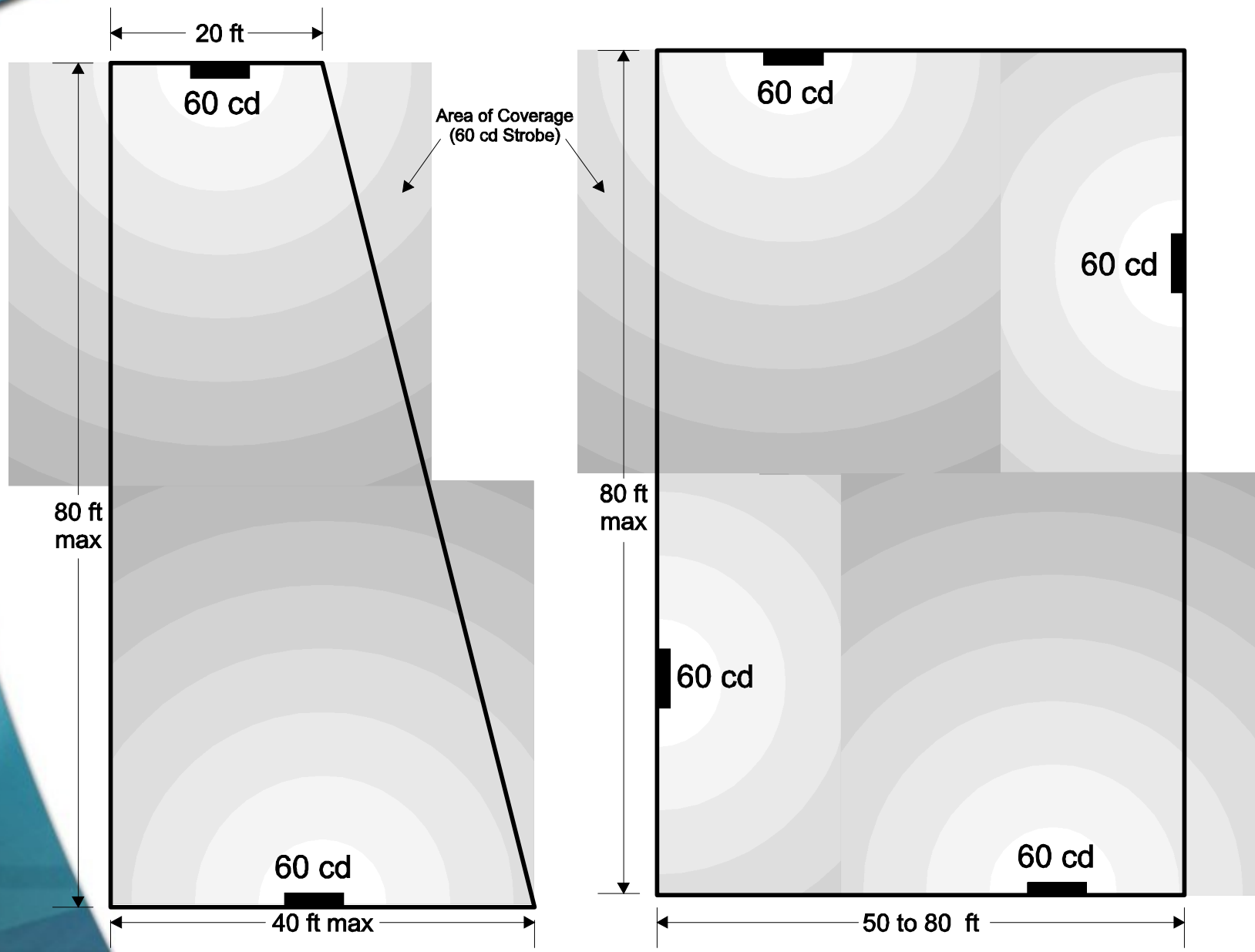
**Correct strobe coverage**



**Incorrect strobe coverage**

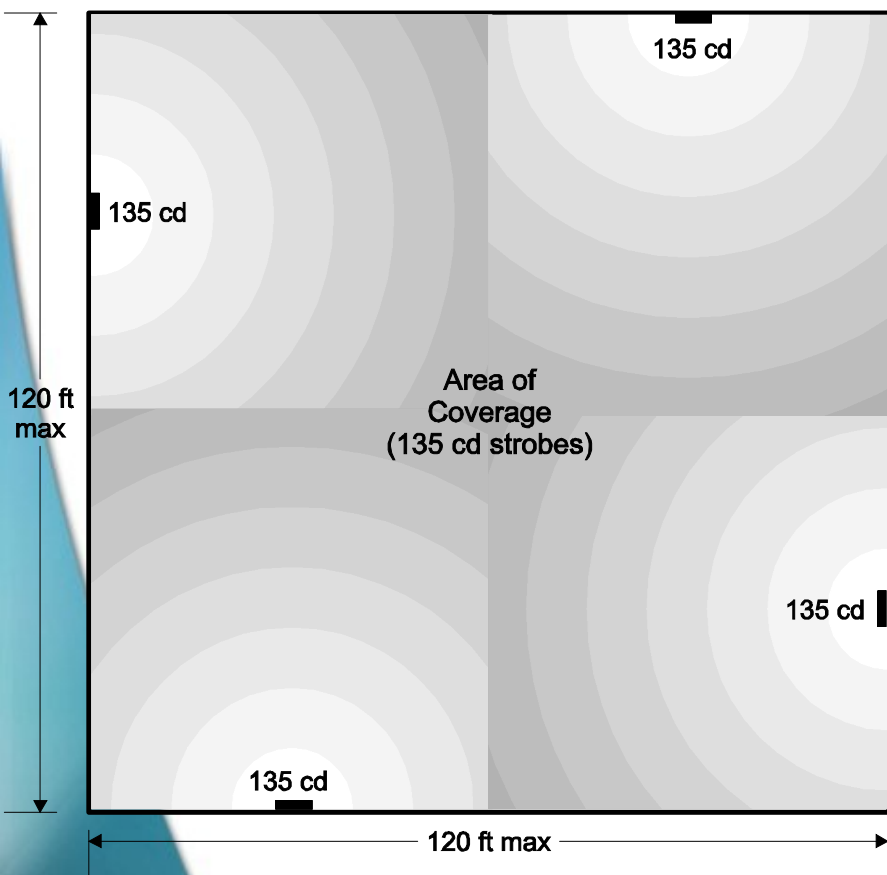


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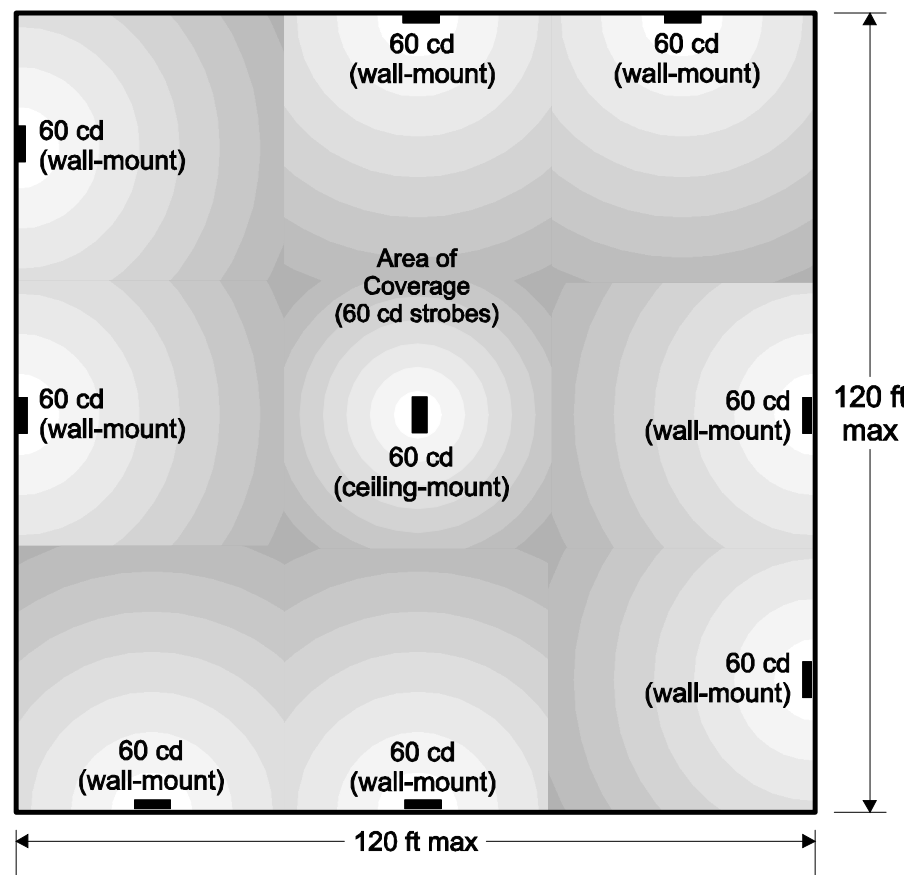




# Strobe Coverage Area



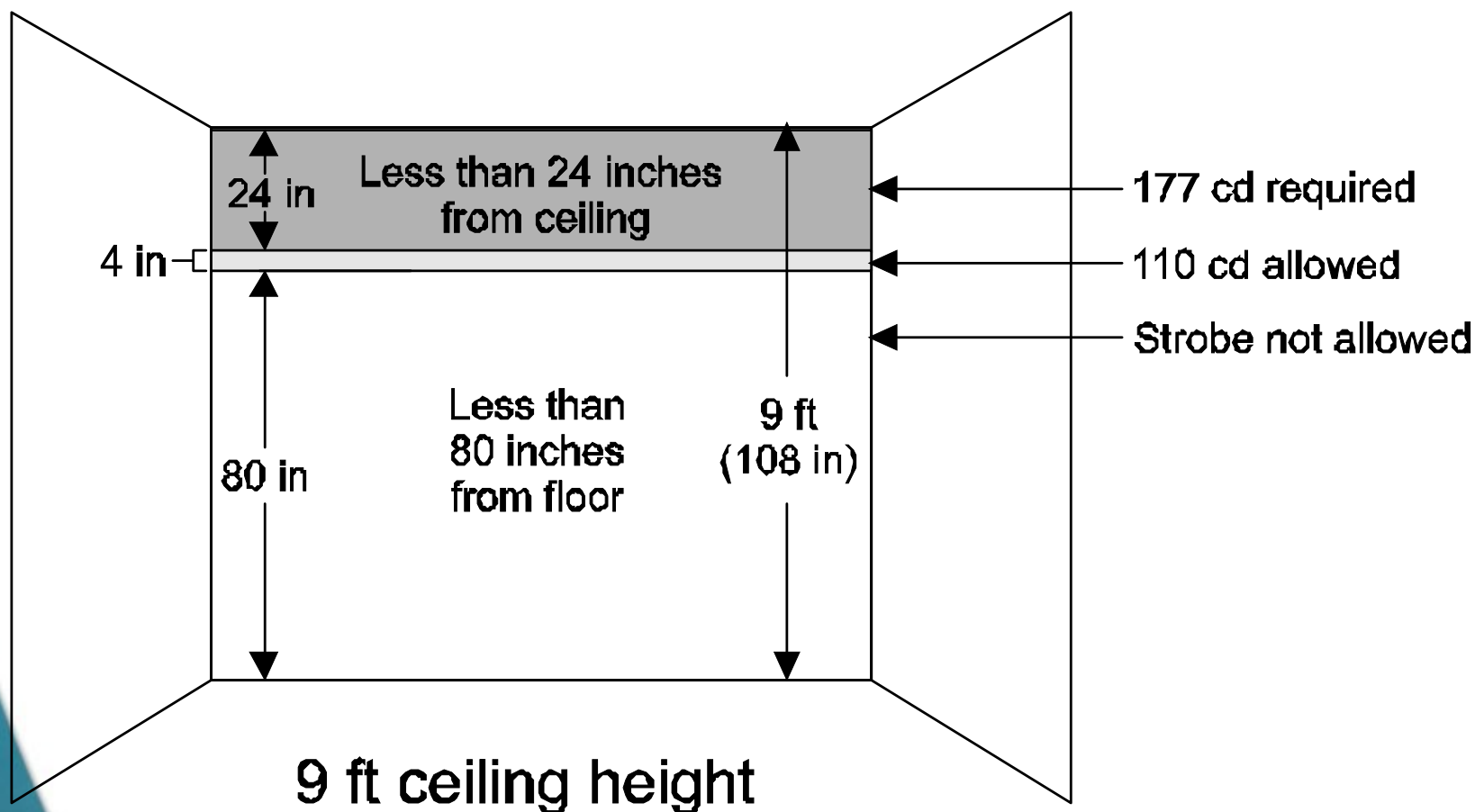
**Wall-mount**



**Combination Wall/Ceiling-mount  
(10 ft. ceiling)**

# Sleeping Rooms - NFPA

- Visual to be located within 16 feet of the pillow.





# UL Changes - 2004

- **UL has eliminate:**
  - **80 - 110% Operating range & 24v current rating.**
- **New UL standard operating range 24volt device;**
  - **16V-33V**
  - **current rated at 16V.**
- **Load Calculations**
  - **Center Load Calculations**
  - **Point-to-Point Calculations**
  - **Lump Sum Method**
    - **Starting voltage shall be 20.4V**

**Load Calc**

**GENESIS™**



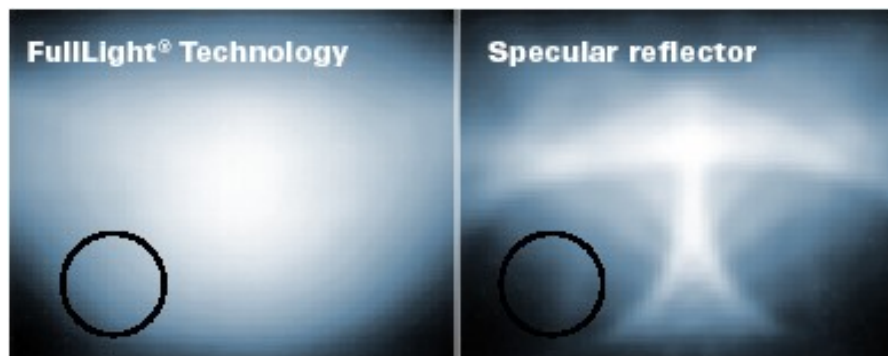
**Signaling From The Future**





# FullLight™ Technology

*FullLight™ Technology (exclusive)*  
**Important to NFPA/UL reflection doctrine**



Patented, break-through technology!!  
“smooth” light

**EST FullLight™ vs. competitors ‘T’ patterns**



# Genesis Products

## Strobe Models

- **Strobe - G1(R)F-VM**

- Field Selectable 15, 30, 75 or 110 Candela
- Self-synchronized:  
one flash per second within 200 milliseconds over 30 minutes on common circuit.
- With optional Signal Master:  
one flash per second within 10 milliseconds indefinitely.
- Temporal setting (private mode only):  
synchronized to temporal output of horns on the same circuit.



# Genesis Products

- Temporal Horn-Strobe  
**G1(R)F-HDVM**

- Temporal Horn:  
Synchronized at temporal  
rate within 200  
milliseconds over thirty  
minutes on common circuit.
- With optional Signal  
Master, synchronized at  
temporal rate within 10  
milliseconds indefinitely.
- Horn: Continuous only.

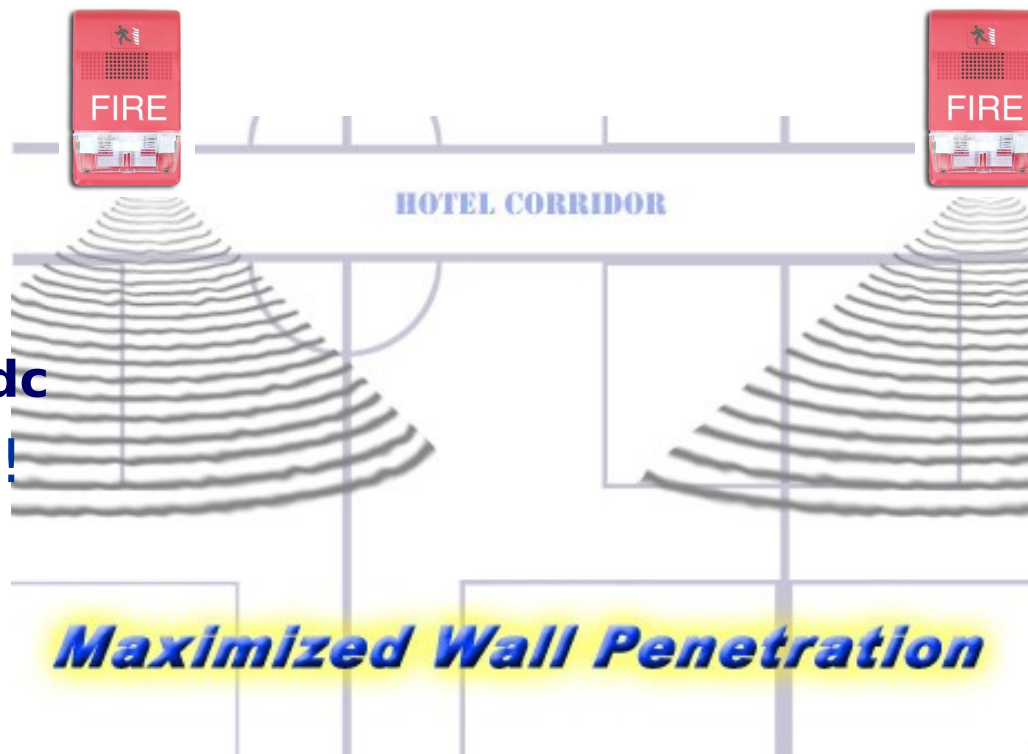


- Field Selectable 15, 30,  
75 or 110 Candela
- Selectable high (98 dB)  
or low (92 db) dB horn  
output.
- Jumper snip to steady  
tone for coded systems
- Temporal horn (default  
output)

# Genesis Products

## Horn Signal

- Multiple frequency “GROWL” tone maximizes wall penetration
- 98dBA peak, 94dBA avg.
  - Anechoic @ 10', 24Vdc
- Synchronized Audible !





# Genesis Products



## Ceiling Strobe

- Multi-candela selectable strobe 15, 30, 75, and 95cd
- Future Ceiling 95, 115, 150, 177 cd
- Adjustable candela with indicator
- Mounts to 4 inch square 2-1/8 inch deep box
- #18-12 AWG Terminal Blocks.

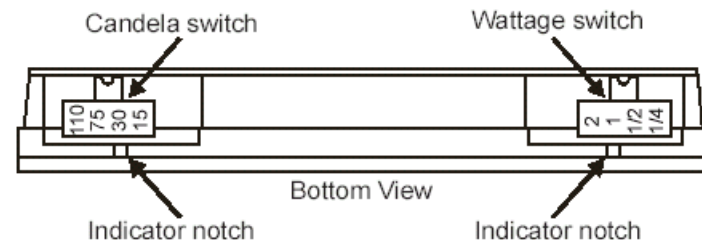
## Strobe Flash Rate

- Self-synchronized:  
one flash per second within 200 milliseconds over 30 minutes on common circuit.
- With optional Signal Master:  
one flash per second within 10 milliseconds indefinitely.



# Wall Mount Speakers

- Field Switch Configurable
  - **15, 30, 75, 110 cd**
  - **1/4, 1/2, 1, 2 watt**
  - **81, 84, 87, 90 dBA**
  - **25Vrms or 70Vrms models**
- Easy Install
  - **Fits standard 4" box - 2-1/8"**
  - **No extension ring**
  - **#18 - #12 AWG terminals**





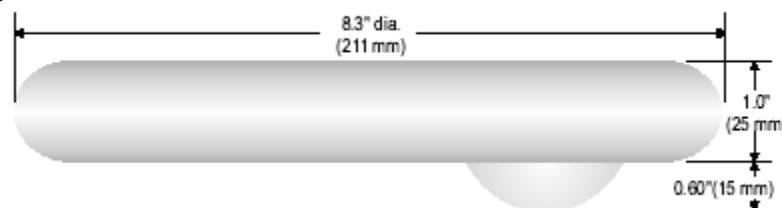
# Ceiling Speaker Strobe

- Field Switch Configurable
  - **15, 30, 75, 95 cd**
  - **Future 95, 115, 150, 177 cd**
  - **1/4, 1/2, 1, 2 watt**
  - **80.7, 83.7, 87.1, 90.1 dBA**
  - **25Vrms or 70Vrms models**
- Easy Install
  - **Fits standard 4" box - 2-1/8"**
  - **No extension ring**
  - **#18 - #12 AWG terminals**



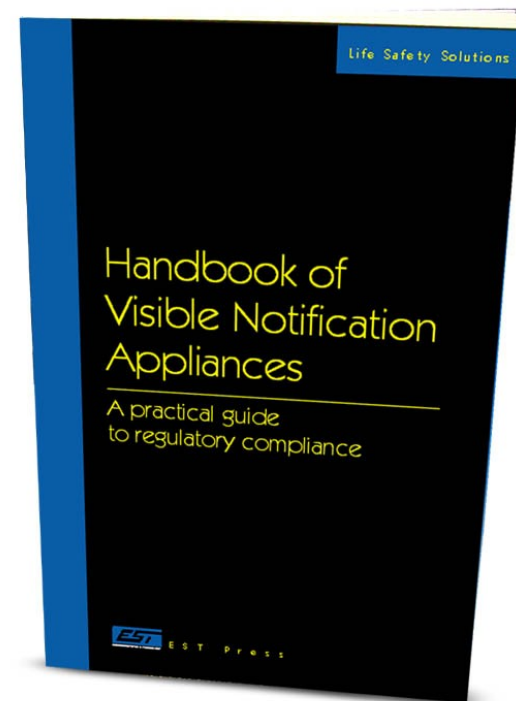
One or more patents pending.

## Dimensions



# New Strobe Application Guide

- Handbook format
- Comprehensive
- Analytical



***Any Questions.....?***